Popping Canisters

Time: 5 minutes

Materials: film canisters + lids / blu tack / effervescent tablets[1] / sample tray / water / paper towel

[1] *e.g. vitamin tablets such as Berocca*

Preparation: none (assess risks of flying canisters/loud popping noises)

Summary: Demonstrate the explosive force of trapped gas by allowing CO_2 from effervescent tablets to build up in a sealed container and then 'pop'.

Instructions:

1. Place the blu tack in the well on the inside of the canister lid.
2. Securely fix ½ an effervescent tablet to the blu tack.
3. Fill a canister to the ¼, ½ or ¾ full mark.
4. Put the lid on firmly (clicked closed), then turn the canisters upside down and place in the tray on the floor, ensuring there is plenty of space overhead.
5. **Stand well back** and wait for the canister to pop, observing the time taken to pop and the height reached. **Do not return to canister until it has popped, or all liquid has leaked out. Be careful.**
6. Clean up using paper towel!

Concepts/explanations:

This is a useful demonstration to show that gas is a major driving force for violent volcanic eruptions (e.g. Vesuvius, Montserrat, Mount St. Helens).

A canister with more water should pop faster as the gas inside will quickly run out of space to fill, but a canister with less water should pop more forcefully as more gas and therefore more force has built up. In volcanoes, if the magma contains less gas or the gas can easily escape, eruptions will generally be more *effusive*. However, if the magma is more viscous (sticky, generally due to +silica), expanding gas can force the magma out creating an *explosive* eruption.